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# What happens to Household Hazardous Waste

presented to:



March 29, 2006



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The average house

- basement
- kitchen
- garage







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# The need for HHW Collections





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Everyone knows why HHW collections are held, but not everyone knows what happens to the waste once it is collected.





# Transporting the Waste

## -Compliance with 49 CFR DOT Regulations

**HAZARDOUS MATERIALS LOAD AND SEGREGATION CHART**

CLASS	HAZARDOUS MATERIALS	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3	3	4.1	4.2	4.3	5.1	5.2	6.1	7	8	9
CLASS 1	EXPLOSIVES																			
CLASS 1.1	EXPLOSIVES																			
CLASS 1.2	EXPLOSIVES																			
CLASS 1.3	EXPLOSIVES																			
CLASS 1.4	EXPLOSIVES																			
CLASS 1.5	VERY INSENSITIVE EXPLOSIVES																			
CLASS 1.6	EXTREMELY INSENSITIVE EXPLOSIVES																			
CLASS 2	FLAMMABLE GASES																			
CLASS 2.1	FLAMMABLE GASES																			
CLASS 2.2	NON-FLAMMABLE GASES																			
CLASS 2.3	POISONOUS GAS																			
CLASS 3	FLAMMABLE LIQUIDS																			
CLASS 3.1	FLAMMABLE LIQUIDS																			
CLASS 3.2	FLAMMABLE LIQUIDS																			
CLASS 3.3	FLAMMABLE LIQUIDS																			
CLASS 4	FLAMMABLE SOLIDS																			
CLASS 4.1	FLAMMABLE SOLIDS																			
CLASS 4.2	SPONTANEOUSLY COMBUSTIBLE																			
CLASS 4.3	DANGEROUS WHEN WET MATERIALS																			
CLASS 5	OXIDIZERS																			
CLASS 5.1	OXIDIZERS																			
CLASS 5.2	ORGANIC PEROXIDES																			
CLASS 6	POISONOUS LIQUIDS																			
CLASS 6.1	POISONOUS LIQUIDS																			
CLASS 7	RADIOACTIVE MATERIALS																			
CLASS 8	CORROSIVE LIQUIDS																			
CLASS 9	MISCELLANEOUS																			

**NOTES:**

1. The chart is for use in determining the segregation of hazardous materials in a vehicle transport unit. It is not intended to be used for determining the segregation of hazardous materials in a container or for determining the segregation of hazardous materials in a container or for determining the segregation of hazardous materials in a container.
2. The chart is for use in determining the segregation of hazardous materials in a vehicle transport unit. It is not intended to be used for determining the segregation of hazardous materials in a container or for determining the segregation of hazardous materials in a container or for determining the segregation of hazardous materials in a container.
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HHW is a DOT Hazardous Material



## Transportation Issues

- Paperwork Completion
  - Manifest, Land Disposal Certs, etc
- Drum Labeling / Marking
- Segregation & Load Securement
- Placarding
- Transportation Security
- Emergency Response Capabilities
- Manifest returned in 45 days





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## HHW Disposal Options

- Recycling
- Fuels Blending
- Waste to Energy Incineration
- Waste Water Treatment
- Incineration
- Stabilization & Landfill
- Non-Hazardous Landfill





# Recycling

Items that can be recycled include:

- Light Bulbs
- Batteries
- Ballasts
- Mercury items
- Scrap Electronics
- Oil
- Antifreeze
- Paint
- Propane Cylinders







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# Fluorescent Lamp Recycling





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## Mercury Retort



# Fuels Blending

Blending of waste for use as Industrial fuel for cement kilns and boilers

## Suitable Wastes:

- Paints & Stains
- Paint Thinner
- Gasoline
- Automotive Fluids
- Solvents

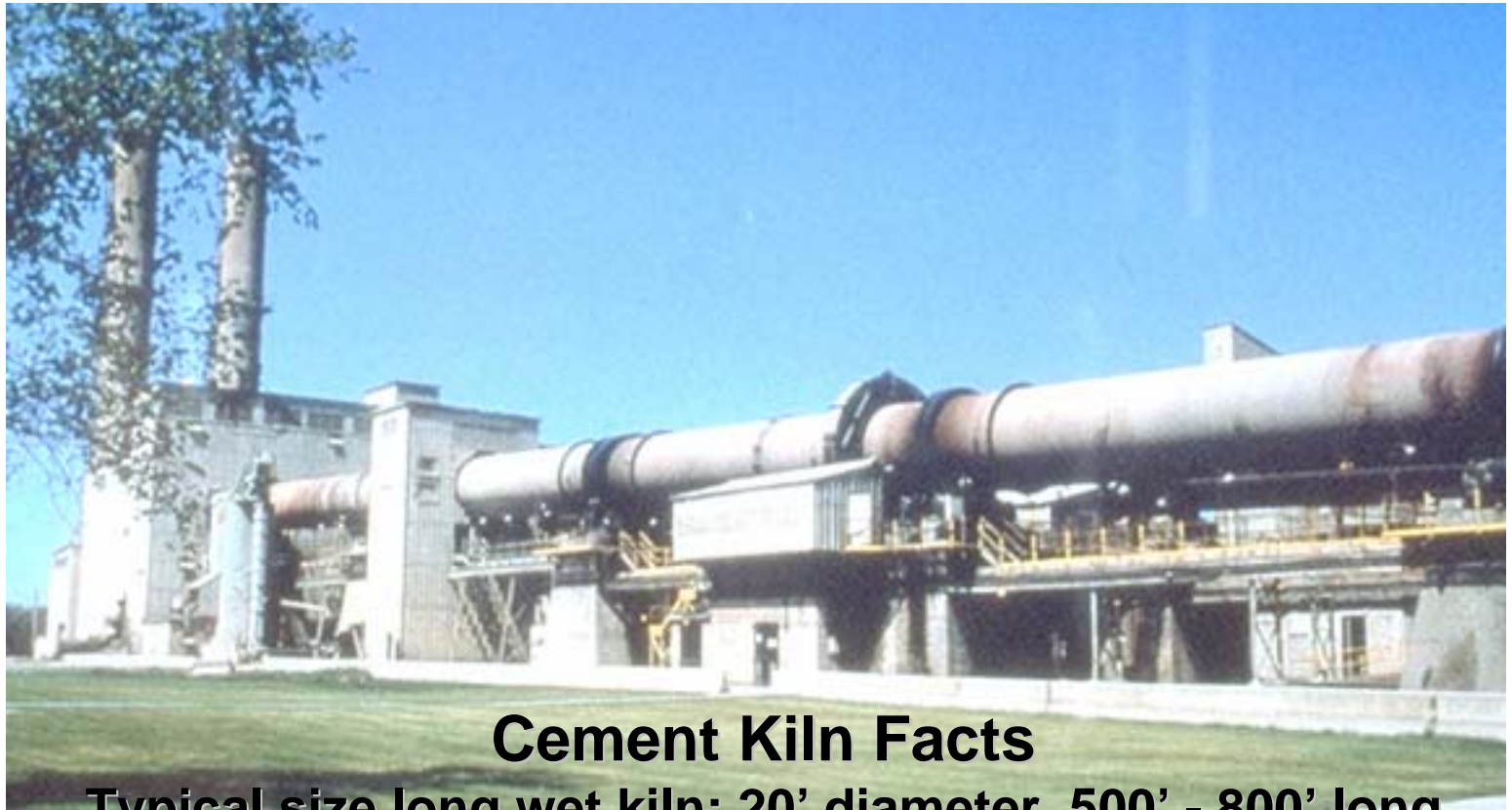






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# Fuels for Beneficial Reuse - Cement Kilns



## Cement Kiln Facts

**Typical size long wet kiln: 20' diameter, 500' - 800' long**

**Hot end temp 3,400 degrees F**

**Burn 12 tons of fuel per hour**

**Rotates approx. 1 RPM**



## Waste-to-Energy Plants

There are currently about 98 waste-to-energy plants in the country. In these facilities, solid waste is burned to create heat energy. This is used to boil water and create steam, which turns a turbine and generates electricity. The electricity is sold to power plants and distributed to homes and businesses.

### Suitable types of wastes

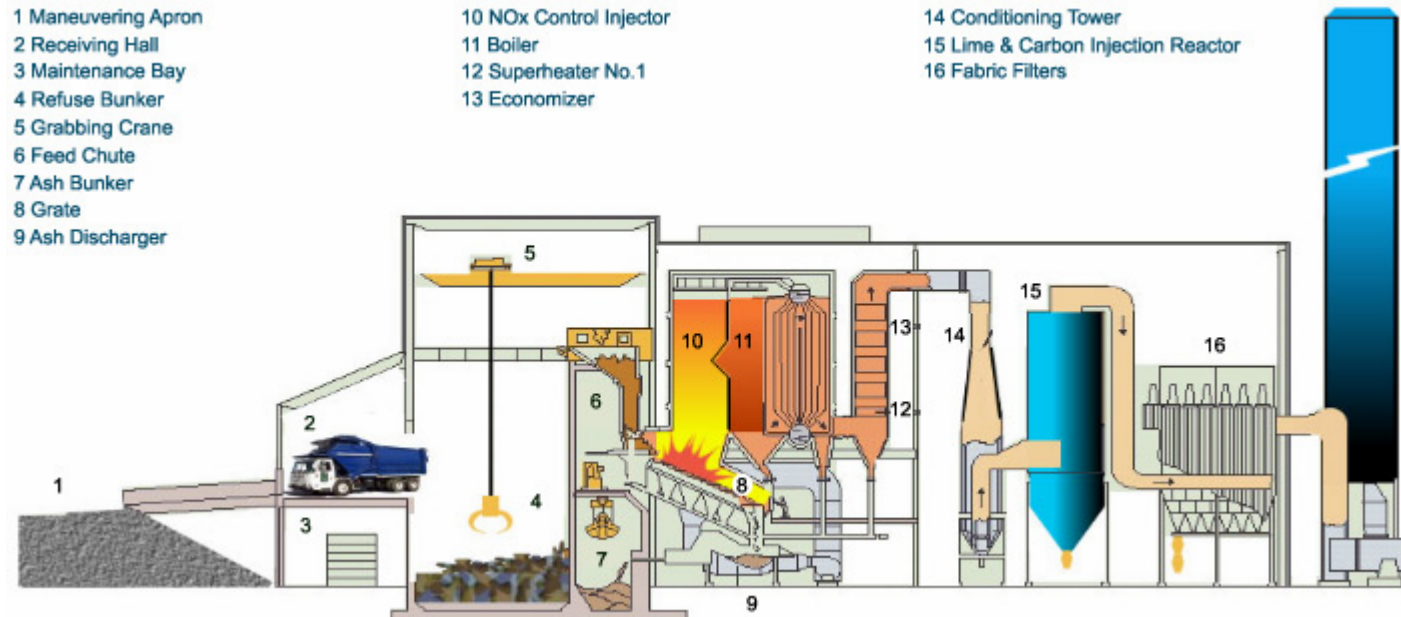
#### Non-RCRA Solids & Liquids

- Latex Paint
- Driveway Sealer
- Joint Compound/Spackling
- Soap/Shampoo/Detergent
- etc.





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A typical Waste to Energy Facility  
Operates at 2,000 degrees F  
Process 1,000 - 1,500 tons of waste per day  
Produces 34 Megawatts of electricity  
Enough to power 28,000 households  
Saving 500,000 barrels of oil annually.  
Many facilities also sell the steam for industrial heat.





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## Waste Water Treatment

Wastewater treatment facilities - chemically treat liquid wastes to neutralize them and precipitate out the solids.

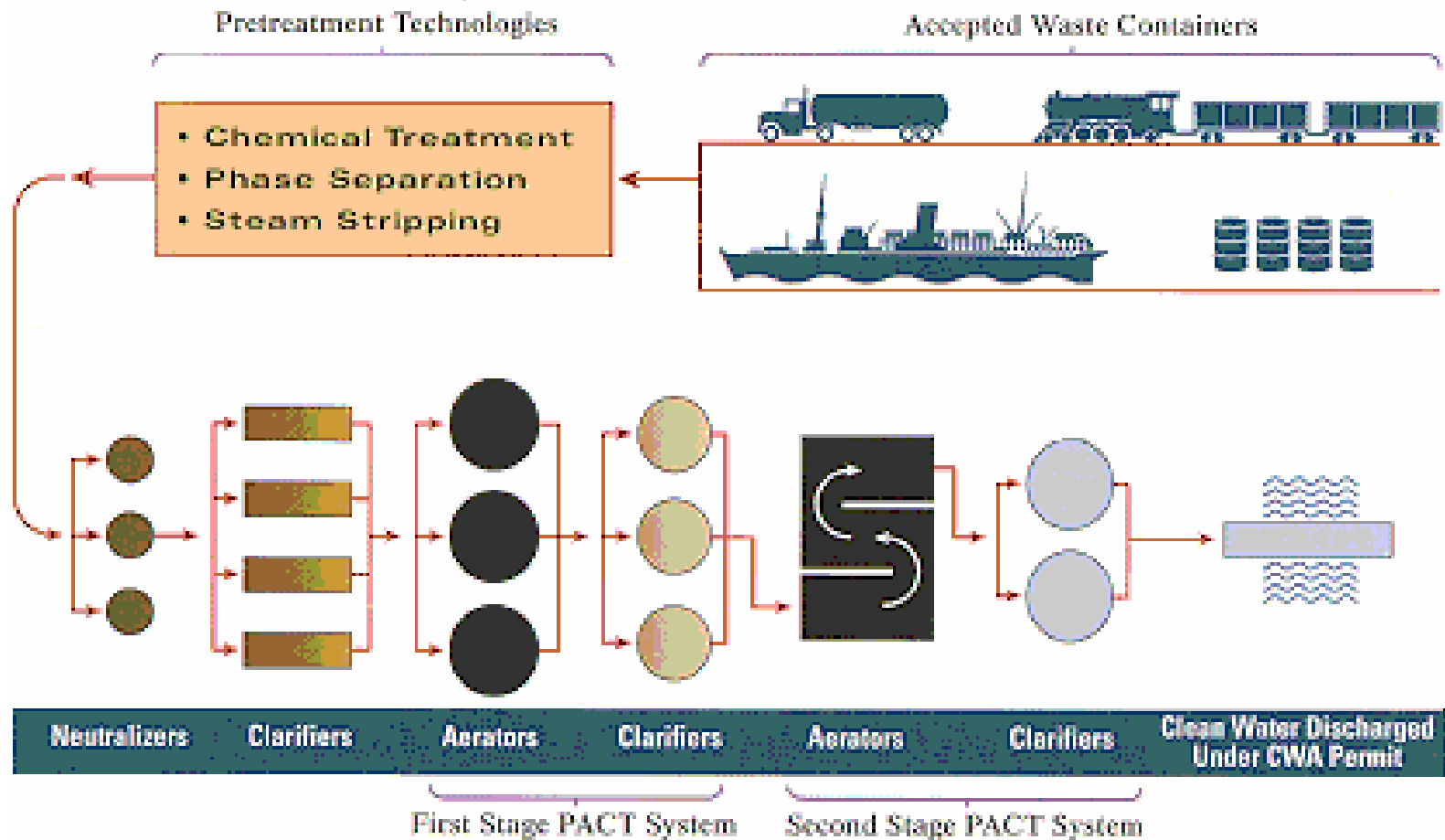
Suitable waste types:

- Inorganic acids
- Caustics
- Aqueous cleaners





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## Incineration

Incineration is the most secure destruction method for most wastes. Incineration also provides volume reduction. Certain items such as mercury and certain batteries are prohibited from being incinerated.

### Suitable Wastes:

- Pesticides
- Solvents
- Paints
- PCB's
- Corrosives







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# Destructive Incineration - Thermal Facility



## Incinerator Facts

**Typical size kiln: 15' diameter, 65' long**

**Hot end temp 2,200 degrees F**

**Burn 60,000 tons of waste per year**



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IN 2006



BECOMES



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Same Great Service  
Just a New Name

